

REMARKS

Claims 1-5 remain pending in this application with claims 1, 2 and 5 being amended, claims 3 and 4 being cancelled and claims 6-8 being added by this response. Claim 1 has been amended in accordance with the suggestions of the Examiner for clarification. Support for the amendments in claim 1 can be found throughout the specification and more specifically on page 1, line 31 to page 2, line 10. Support for the newly added claims 6-8 can be found throughout the specification and more specifically on page 1, line 31 to page 2, line 10 and page 2, lines 14-26 as well as original claim 2. Therefore, the applicant respectfully submits that no new matter is added by these claims.

Objection to the Drawings

The Examiner has objected to the drawings under 37 CFR 1.83(a) as not showing every feature of the invention specified in claims 3 and 4. Claims 3 and 4 are cancelled by this response. Therefore, in view of the cancellation of claims 3 and 4 it is respectfully submitted that this objection is satisfied and the objection be withdrawn.

Objection to the Specification

The specification is objected to for certain informalities. The specification has been amended in accordance with the comments of the Office Action to correct typographical errors. Page 1, line 11 and line 22 are amended to correct typographical errors. Page 1, line 24 is amended to clarify the phrase "a perfect coaxiality between" as suggested by the Office Action. Page 1, line 26 is amended to clarify the term "coaxiality" as suggested by the Office Action. Page 2, lines 6-7 have been amended similarly to clarify the phrase "the coaxiality between" as suggested by the Office Action. Page 2, line 11 has been amended to correct a typographical error. Page 2, line 11 has been amended to replace the term ROHACELL HF with its generic terminology as suggested by the Office Action. Page 2, line 25 and page 3, line 24 have been amended to correct a typographical error in the word "molding." Page 3, line 19 has been amended to replace "3A to 3D" with "3A, 3B, 3C and 3D" as suggested by the Office Action. Page 3, lines 22-25 have been amended in accordance with the Office Action.

In view of the above amendments to the specification, it is respectfully submitted that these objections are satisfied and the objection be withdrawn.

Rejection of Claim 4 under 35 U.S.C. § 112, first paragraph

Claim 4 is rejected under 35 U.S.C. 112, first paragraph. Claim 4 is cancelled by this response. Therefore, in view of the cancellation of claim 4, it is respectfully submitted that this rejection is now moot and should be withdrawn.

Rejection of Claims 1, 2, 5, 3 and 4 under 35 U.S.C. § 112, second paragraph

Claims 1, 2, 5, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which is regarded as the invention. Claims 3 and 4 have been cancelled. Claims 1, 2 and 5 have been amended for clarification as suggested by the Office Action. More specifically, the phrase “a profile according to a periodic or constant function” has been removed. The characteristics of the inner bar have been more clearly defined in claim 1, as suggested by the Office Action. Therefore, all amendments suggested by the Office Action have been made to clarify claim 1.

Furthermore, claims 3 and 4 are being cancelled. Therefore, in view of the above remarks and amendments to the claims, it is respectfully submitted that this rejection has been satisfied and should be withdrawn.

Rejection of Claims 1, 2, 3 and 4 under 35 USC § 103(a)

Claims 1, 2, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capen et al. (US Patent No. 2,911,333) in view of Schafer (US Patent No. 4,161,704). Claims 3 and 4 are cancelled by this response.

The present claimed invention provides a “coaxial structure microwave filter” including a tube presenting a constant inner diameter and a fully metallized constant outer surface and an inner bar with a fully metallized outer profile following a periodic curve. The tube and the bar are realized in foam of a metallizable synthetic material, with electrical characteristics approaching those of air. The inner bar has a largest diameter nearly equal to the inner diameter of the tube.

Capen describes “filter devices and methods for making them and more particularly to distributed parameter coaxial filters particularly adapted to be manufactured by molding techniques” (Col. 1, lines 15-18). “An inner conductor 9 is placed axially in electrical contact with portions of the metallized surfaces. The second half-cylindrical section 3 is then electrically connected to the first half-cylindrical section 2 by soldering or otherwise joining the corresponding metallized portions of the cylinders” (Col. 2, lines 43-48). Thus, the cylindrical section of Capen is divided into two pieces that must be joined together by soldering or other methods.

Capen describes a coaxial structure for a microwave filter. In Fig. 1 of Capen, “the body of the coaxial filter structure 1 consists of two similar halves 2 and 3 of a dielectric material joined together” (Col. 2, lines 5-7). Thus, the external tube, 1 is obtained by connecting two half molded cylindrical barrels. The barrels 2 are molded with the requested cavities 7. This is supported by Capen which states that “the filter structure 1 is preferably made by molding a half cylinder 2 of a high polymeric material in a die, the die structure shaping the material to provide axially spaced cavities 7 therein” (Col. 1, lines 17-20). The structure of Capen, which uses two half barrels, is wholly unlike the present claimed invention which describes one external tube. Therefore, Capen neither discloses nor suggests “[a] coaxial structure microwave filter comprising a tube presenting a constant inner diameter and a fully metallized constant outer surface” as recited in the present claimed invention.

Additionally, the Office Action on page 5 correctly admits that “Capen ... does not disclose that the dielectric material is a foam material ... and that a thermoforming process is used to ... [form] the foam dielectric and metallic layers.”

Schafer describes circuit components such as frequency filters, impedance transformers, and time delay elements which are fabricated into an assembly which is electrically and mechanically coupled to the center conductor. A seamless dielectric material is telescoped over the assembly and then the assembly is telescoped into a seamless outer jacket of conductive material. Then, the ID (inner dimension) of the outer jacket is reduced

into contact with the dielectric material surrounding the assembly and center conductor by drawing the jacket through a die. (See Abstract)

Schafer is concerned with coaxial cable. As “shown in FIG. 1 [is] a preassembly 10 of one or more microwave circuit components 12 such as conductive discs electrically and mechanically coupled to a center conductor 14 to form a low-pass frequency filter. The preassembly 10 is designed and fabricated in a conventional manner.” (Col. 2, lines 59-64). However, Schafer (with Capen) neither discloses nor suggests “the tube and the bar being realized in foam of a metallizable synthetic material” as recited in the present claimed invention.

Schafer may use a polymeric foam material (TEFLON), as described in the Office Action, however, the TEFLON is only used for layers 18, 18'. Schafer describes that “[c]onductor 16 is surrounded by a layer 18 of a dielectric material. If it is desired to have the preassembly 10 located between and spaced from the ends of the coaxial cable, the other end of center conductor 14 is similarly coupled to one end of a center conductor 16' which is surrounded by layer 18' of dielectric material” (Col. 3, lines 2-8). “The dielectric materials 18, 18' ... have low moisture absorption. The preferred dielectric material is polytetrafluoroethylene ... sold commercially as TEFLON” (Col. 3, lines 55-64). Thus, Schafer (with Capen) merely describe using the TEFLON for two inner layers 18 and 18'. Additionally, in Schafer (with Capen), the outer jacket (22) and the inner cable are metallic (See Col. 1, lines 19-20, Col. 2, line 68-Col. 3, line 3 and Col. 3, lines 15-17). However, merely having metallic parts as in Schafer with Capen is wholly unlike the present claimed invention which describes “metallizable synthetic material.” Therefore, Schafer with Capen neither discloses nor suggests “the tube and the bar being realized in foam of a metallizable synthetic material” as recited in the present claimed invention.

Furthermore, even if the systems of Capen and Schafer were combined, as suggested by the Office Action, the combined system would be a filter containing two half molded cylindrical barrels molded together to create one tube or one seamless tube. The dielectric material in the combined system would be made out of TEFLON. The combined system would also contain “high conductivity metallic materials” (Schafer, Col. 1, line 20).

However, the combined system, similar to the individual systems would not disclose or suggest “the tube and the bar being realized in foam of a metallizable synthetic material” as recited in the present claimed invention. This is because the combined system would merely contain metallic materials. However, merely containing metallic materials is not the same as a tube and a bar “being realized in foam of a metallizable synthetic material” as in the present claimed invention. Therefore, even the combined system of Capen and Schafer neither discloses nor suggests the features of the present claimed invention.

In view of the above remarks and amendments to the claims it is respectfully submitted that there is no 35 USC 112 compliant enabling disclosure in Capen and Schafer, when taken alone or in combination, showing the above discussed features. It is further respectfully submitted that claim 2 is not unpatentable over Capen and Schafer, when taken alone or in combination. It is thus, further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claim 5 under 35 USC § 103(a)

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the above rejection as applied to claim 1 and further in view of Thomas (US Patent No 2,641,646).

Thomas describes “filter devices and particularly ... filters adapted to be employed with ultra high frequency electromagnetic waves” (Col. 1, line 1-3). Thomas describes an inner and outer conductor where “this inner conductor portion 14 is preferably composed of a solid copper rod soldered or brazed into heavy copper end plates 20 in the expanded portions 15 of the inner conductor” (Col. 2, lines 47-51). However, as discussed above, merely having metallic parts as in Thomas is wholly unlike the present claimed invention which contains a tube and a bar that is “realized in foam of a metallizable synthetic material” as recited in claim 1 of the present invention. Therefore, Thomas (with Capen and Schafer), neither discloses nor suggests the features claimed in claim 1 of the present invention. As claim 5 is dependent on claim 1, it is respectfully submitted that claim 5 is also not made unpatentable by Thomas with Capen and Schafer.

Even if the systems of Capen, Schafer and Thomas were combined, the combined system would not make the present claimed invention unpatentable. Capen describes "filter devices and methods for making them and more particularly to distributed parameter coaxial filters particularly adapted to be manufactured by molding techniques" (Col. 1, lines 15-18). Schafer describes circuit components such as frequency filters, impedance transformers, and time delay elements are fabricated into an assembly which is electrically and mechanically coupled to the center conductor. Thomas describes filters that are adapted to be employed with ultra high frequency electromagnetic waves. The combined system of Capen, Schafer and Thomas would produce a microwave filter. The dielectric material in the combined system would be made out of TEFILON. The combined system would also contain "high conductivity metallic materials" (Schafer, Col. 1, line 20). The size of the cavities in the combined system would vary. However, the combined system, similar to the individual systems would not disclose or suggest "the tube and the bar being realized in foam of a metallizable synthetic material" as recited in claim 1 of the present invention. This is because merely having metallic surfaces as in the combined system, does not disclose or suggest "metallizable synthetic material." Therefore, even if the systems of Capen, Schafer and Thomas were combined, the combined system neither discloses nor suggests "the tube and the bar being realized in foam of a metallizable synthetic material" as recited in claim 1 of the present invention. As claim 5 is dependent on claim 1, it is respectfully submitted that claim 5 is also not made unpatentable by the combined system of Thomas, Capen and Schafer.

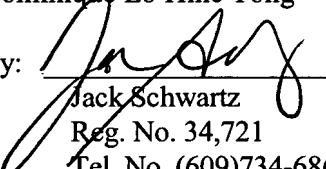
Having fully addressed the Examiner's rejections, it is believed that, in view of the amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's attorney at the phone number below, so that a mutually convenient date and time for a telephonic interview may be scheduled.

Application Serial No. 10/540,147

Attorney Docket No. PF030010

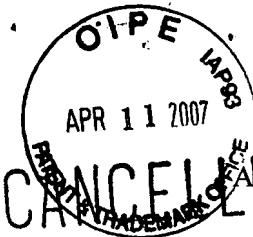
No additional fee is believed due. However, if a fee is due, please charge the fee to
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April 9, 2007



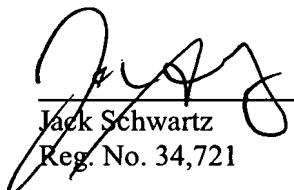
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